



Phyllopezus lutzae (Loveridge, 1941) (Squamata, Phyllodactylidae): new records from the Brazilian state of Paraíba

Pedro Ricardo Alexandre de Albuquerque¹, Mayara da Silva Ribeiro de Moraes¹, Pedro Teófilo Silva de Moura², Wendy Narjara Silva Santos³, Renato Magnum Tavares Costa⁴, Fagner Ribeiro Delfim⁵, Bruna Elizabeth Silva de Pontes¹

1 Programa de Pós-Graduação em Ecologia e Monitoramento Ambiental, Centro de Ciências Aplicadas e Educação, Universidade Federal da Paraíba, Campus IV (Litoral Norte), CEP 58287-000, Av. Santa Elizabete, 160, Centro, Rio Tinto, PB, Brazil. **2** Universidade Federal Rural do Semiárido, Laboratório de Ecologia de Populações Animais, Campus Oeste, Departamento de Ciências Animais, CEP 59625-900, R. Francisco Mota, 572 - Pres. Costa e Silva, Mossoró, RN, Brazil. **3** Universidade Federal da Paraíba, Centro de Ciências Exatas e da Natureza, Laboratório de Mamíferos da UFPB, Cidade Universitária, CEP 58051-970, Castelo Branco, Campus I, João Pessoa, PB, Brazil. **4** Universidade Federal da Paraíba, Departamento de Sistemática e Ecologia, Laboratório de Taxonomia de Angiospermas, Cidade Universitária, CEP 58051-970, João Pessoa, PB, Brazil. **5** Universidade Federal da Paraíba, Departamento de Sistemática e Ecologia, Coleção Herpetológica da Universidade Federal da Paraíba, Cidade Universitária, CEP 58051-970, Castelo Branco, Campus I, João Pessoa, PB, Brazil.

Corresponding author: Pedro Ricardo Alexandre de Albuquerque, pra.albuquerque@gmail.com.

Abstract

Phyllopezus lutzae (Loveridge, 1941) is a bromelicolous lizard species that inhabits the Atlantic Forest in northeastern Brazil. In this work we report the first records of this species for Paraíba state, Brazil. The records extend the distribution of the species 47 km north, helping to fill a gap in its distribution in northeastern Brazil.

Key words

Atlantic Forest, gecko, lizards, Northeastern Brazil.

Academic editor: Edward A. Myers | Received 18 October 2018 | Accepted 8 January 2019 | Published 18 January 2019

Citation: Albuquerque PRA, Moraes MSR, Moura PTS, Santos WNS, Costa RMT, Delfim FR, Pontes BES (2019) *Phyllopezus lutzae* (Loveridge, 1941) (Squamata, Phyllodactylidae): new records from the Brazilian state of Paraíba. Check List 15 (1): 49–53. <https://doi.org/10.15560/15.1.49>

Introduction

The family Phyllodactylidae is composed of gecko lizards with trans-Atlantic distributions (Gamble et al. 2008). The family comprises 146 species distributed in 10 different genera: *Asaccus*, *Garthia*, *Gymnodactylus*, *Haemodracon*, *Homonota*, *Phyllodactylus*, *Phyllopezus*, *Ptyodactylus*, *Tarentola* and *Thecadactylus* (Uetz et al. 2018). There are 12 species belonging to 4 genera of the family in Brazil (Costa and Bérnils 2018).

The genus *Phyllopezus* Peters, 1877, comprises 5 species of large-bodied geckos known for their saxicolous

and crepuscular/nocturnal habits (Vanzolini et al. 1980, Rodrigues 1986, Vitt 1995, Passos et al. 2013). The genus occurs in South America in Paraguay, Bolivia, Argentina, Peru and Brazil and is more commonly found in the open biomes that form the “dry diagonal” of South America (Aurich et al. 2011, Gamble et al. 2011, 2012, Cacciali et al. 2018). *Phyllopezus lutzae* (Loveridge, 1941) is the only species of the genus encountered in forested habitats in the Atlantic Forest biome of Brazil (Carvalho et al. 2005).

Phyllopezus lutzae was originally described by Loveridge (1941) as *Bogertia lutzae* in the family

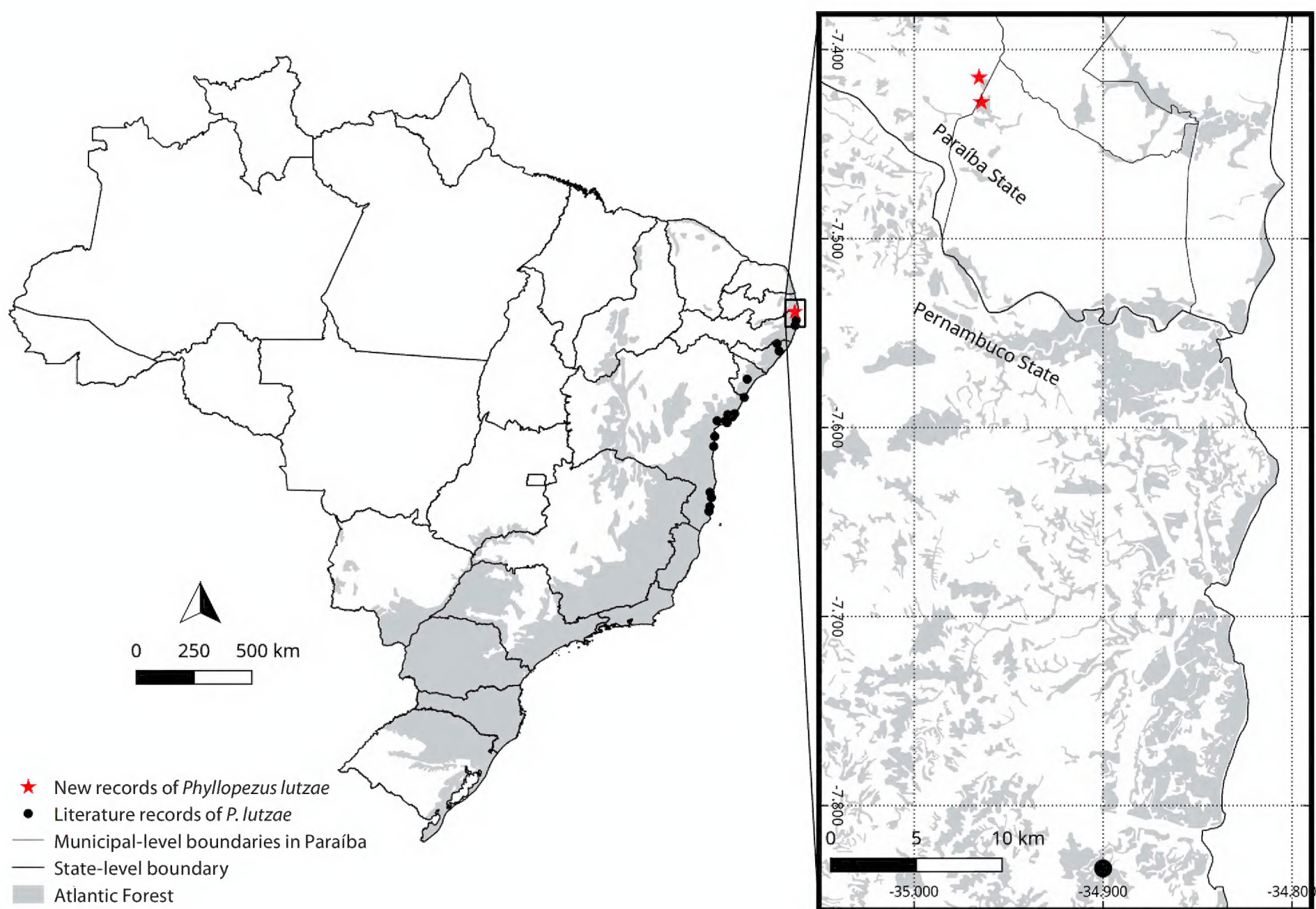


Figure 1. Known geographic distribution of *Phyllopezus lutzae*, including the new records. Black circles = published records; red Stars = new records from the state of Paraíba, Brazil.

Gekkonidae; it was later placed in the Phyllodactylidae by Gamble et al. (2008) and only recently reclassified to the genus *Phyllopezus* by Gamble et al. (2012). In their molecular phylogenetic analysis, Gamble et al. (2012) recovered *B. lutzae* as a sister taxon of *Phyllopezus maranjonensis* (Koch, Venegas & Böhme, 2006). This, coupled with the morphological and karyotypic similarities between the 2 genera, as pointed by Russell and Bauer (1988) and Pellegrino et al. (1997), resulted in the placement of *B. lutzae* in the genus *Phyllopezus* to maintain its monophyly. *Phyllopezus lutzae* is a mostly bromelicolous species (Loveridge 1941, Vanzolini 1972), but was found by Oliveira et al. (2016) among palm leaf sheaths and dry branches on the ground in an area without bromeliads. It is a nocturnal species that feeds on arthropods (Reis 2017). Its known distribution is within the Brazilian Atlantic Forest, ranging from southern Bahia to northern Pernambuco states (Vanzolini 1972, Carvalho et al. 2005, Ávila et al. 2010, Reis 2017). We present the first records of *Phyllopezus lutzae* from the Brazilian state of Paraíba (Fig. 1).

Methods

The new records of *P. lutzae* were made during a fauna rescue program conducted during a vegetal suppression activity preceding a sand mining operation in 2 Brazilian Atlantic Forest fragments in rural areas of the

municipalities of Pedras de Fogo and Caaporã in Paraíba, Brazil. The sand mining operation required the removal of approximately 16.5 ha of vegetation from a forest fragment in the Municipality of Pedras de Fogo and another approximately 16 ha area of forest in the municipality of Caaporã (corresponding to ca 39.5% and 23% of the total area of each forest fragment respectively).

The specimens collected were found already deceased in an area of the fauna rescue program, and were subsequently fixed in 10% formalin and preserved in 70% alcohol. Voucher specimens have been deposited in the Herpetological Collection of the Universidade Federal da Paraíba (CHUFPB). Morphometric measurements were made with a digital caliper (precision 0.01 mm). The collections were authorized by the Paraíba State Environment Agency (Superintendência de Administração do Meio Ambiente, permit no. 013/2018). In addition to the specimens described above, 3 other specimens of *P. lutzae* were found in the Municipality of Pedras de Fogo during the wildlife rescue operation. Those specimens were found alive and were subsequently relocated to a protected forest fragment in a rural area of the municipality of Caaporã, near the area of vegetation suppression (07°25'23" S, 034°57'30" W, Fig. 2).

Together with the new records, we provide a literature review of the recorded occurrences of *P. lutzae* (Table 1). The distribution map based on those records was generated using Q-GIS v. 2.18.17 software (Fig. 1).



Figure 2. Specimens of *Phyllopezus lutzae* rescued during a fauna rescue program at municipality of Caaporã in Paraíba state, Brazil. Photographs by Bruna Pontes and Pedro Albuquerque.

Table 1. Records of *Phyllopezus lutzae* from the Brazilian states of Alagoas, Bahia, Pernambuco and Sergipe based on literature data. CHUFPB = Herpetological Collection of the Universidade Federal da Paraíba (vouchers). *New records.

Locality	State	Latitude (S)	Longitude (W)	References
Flexeiras	Alagoas	09°22'00.0"	035°45'00.0"	Avila et al. 2010
Ibateguara	Alagoas	09°00'02.0"	035°51'12.0"	Silva 2008
Mata de São João	Bahia	12°31'40.9"	038°18'03.1"	Gamble et al. 2012
Trancoso	Bahia	16°39'00.0"	039°06'00.0"	Vrcibradic et al. 2000
Prado	Bahia	17°19'56.6"	039°13'31.1"	Vrcibradic et al. 2000
Simões Filho	Bahia	12°50'00.0"	038°25'00.0"	Vrcibradic et al. 2000
Cumuruxatiba	Bahia	17°06'00.0"	039°11'00.0"	Vrcibradic et al. 2000
Saubara	Bahia	12°50'00.0"	038°49'00.0"	Soeiro 2013
Mata de São João	Bahia	12°28'43.1"	037°57'28.6"	Couto-Ferreira et al. 2011
Jandaíra	Bahia	11°40'28.0"	037°29'03.0"	Dias and Rocha 2014
Camaçari	Bahia	12°38'03.0"	038°04'32.0"	Dias and Rocha 2014
Salvador	Bahia	12°38'03.0"	038°04'32.0"	Dias and Rocha 2014
Cairú	Bahia	13°36'47.1"	038°56'11.6"	Dias and Rocha 2014
Maraú	Bahia	14°06'22.6"	038°59'23.0"	Dias and Rocha 2014
Santa Cruz Cabralia	Bahia	16°23'13.0"	039°10'11.4"	Reis 2017
*Pedras de Fogo	Paraíba	07°24'53.2"	034°57'56.3"	CHUFPB 19517, 19518, 19519
*Caaporã	Paraíba	07°25'40.2"	034°57'51.6"	CHUFPB 24979
Iguarassu	Pernambuco	07°50'00.0"	034°54'00.0"	Vrcibradic et al. 2000
Recife	Pernambuco	08°05'45.6"	034°57'04.9"	Oliveira et al. 2016
Areia Branca	Sergipe	10°45'54.6"	037°20'19.4"	Carvalho et al. 2005

Results

Phyllopezus lutzae (Loveridge 1941)

New records. Brazil: Paraíba: Municipality of Pedras de Fogo (07°24'53.2" S, 034°57'56.3" W), collected by P. Moura, W. Santos, and R. Costa on 2 May 2018, 01:57 pm (3 adult male specimens, CHUFPB 19517, 19518, 19520). Brazil: Paraíba: Municipality of Caaporã (07°25'40.2" S, 034°57'51.6" W), collected by P. Albuquerque and B. Pontes on 6 July 2018, 09:41 am (1 adult male specimen, CHUFPB 24979).

Identification. The specimens were identified following Loveridge (1941), Vanzolini (1968), and Gamble et al. (2012), based on the absence of dorsal tubercles, the coloration of the dorsum (described by Loveridge (1941) as varying from mouse gray to livid liver), digits with undivided lamellae, prominent claws, and a rudimentary pollex (Fig. 3).

The collected specimens had a mean snout-vent

length of 57.46 mm ± 4.55 mm (mean ± standard error; range = 50.76–60.7 mm), tail length of 41.90 mm ± 6.56 mm (range = 34.8–50.4 mm) and body mass of 4.67 g ± 0.80 g (range = 3.5–5.3 g).

Natural history. Three of the specimens of *P. lutzae* (CHUFPB 19517, 19518, 19520) were found associated with the bromeliad species *Aechmea aquilega* in the fauna rescue program area in the municipality of Pedras de Fogo. The fourth specimen (CHUFPB 24979) was found on the ground near clumps of bromeliads in the municipality of Caaporã. The 3 specimens that were released in a protected forest fragment were found in similar conditions on 10 July 2018. All of the specimens were inside or near bromeliads that had been felled or cut during the vegetation removal. The forest fragment at Pedras de Fogo covered approximately 42 ha, and the Caaporã fragment 70 ha. After the sand mining operation, 25.5 ha remained of the Pedras de Fogo fragment (of those, 8 ha in a protected area) and 47 ha of the Caaporã fragment (13 ha in a protected area). The forest

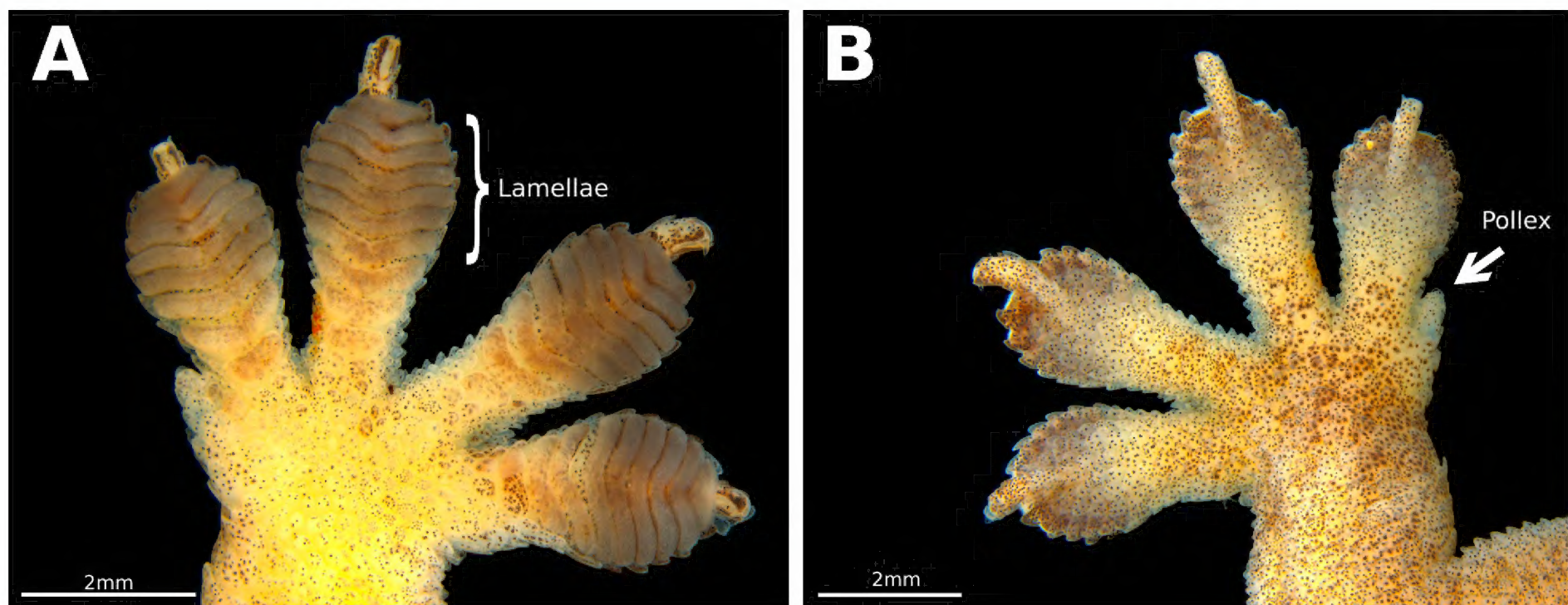


Figure 3. Specimen of *Phyllopezus lutzae* CHUFPB 19518. **A.** The digits with undivided lamellae. **B.** The rudimentary pollex (indicating the specimen is a male).

remnants of both localities were characterized as tabuleiro formations of moist, seasonal forest. Open savanna vegetation can also be found in this region (Thomas and Barbosa 2008).

Discussion

Although *Phyllopezus lutzae* was found by Oliveira et al. (2016) in an area without bromeliads, this species demonstrates a very strict connection with that plant group (Loveridge 1941, Vanzolini 1972). The Atlantic Forest fragments where the new records of *P. lutzae* were made have large clumps of bromeliads representing at least 9 species (RMTC pers. obs.) and dominated by *Aechmea aquilega* (1 of the species known to be used as habitat by *P. lutzae*; Ávila et al. 2010). This bromeliad species does not occur in other Atlantic Forest fragments in Paraíba apart from those of Pedras de Fogo and Caaporã, and only in the Caatinga domain in the state (e.g. Agra et al. 2004). Thus, these characteristics of the areas favored the presence of this rare lizard species.

These records of *P. lutzae* from Paraíba extend its distribution 47 km north, contributing to the expansion of our knowledge of the herpetofauna of the Brazilian Atlantic Forest, and filling in gaps in the distribution of this species in northeastern Brazil. Rodrigues et al. (2013) recently recorded the tropidurid lizard *Strobilurus torquatus* for Paraíba. These new records of *P. lutzae* therefore represent the second distribution expansion recorded in the current decade for a lizard species in the state. Additionally, descriptions of new herpetofauna species for Paraíba (Pires et al. 2014, Graboski et al. 2015, Franco et al. 2017) demonstrate the need for further surveys in unexplored areas of the Atlantic Forest biome.

Acknowledgements

We thank the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) for providing scholarships, the Superintendência de Administração do Meio

Ambiente for the permission to collect the specimens, and Rudá Lucena for the images used in Figure 3.

Authors' Contributions

PRAA, PTSM, WNSS, RMTC and BESP collected the specimens; PRAA, MSRM and BESP made the figures; PRAA and BESP photographed the rescued specimens; BESP made the map; RMTC collected the vegetation data; PRAA, MSRM, FRD and BESP wrote the manuscript; FRD revised the manuscript.

References

- Agra MF, Barbosa MRV, Stevens WD (2004) Levantamento florístico preliminar do Pico do Jabre, Paraíba, Brasil. In: Porto KC, Cabral JJP, Tabarelli M (Eds) brejos de Altitude em Pernambuco e Paraíba, História Natural e Conservação (série Biodiversidade, no. 9). Ministério do Meio Ambiente, Brasília, 123 – 137.
- Aurich J, Koch C, Böhme W (2015) Reproduction in a gecko assemblage (Squamata: Phyllodactylidae) in Marañón Region (Peru) and comments on the largest gecko in the New World. *Phyllomedusa* 14 (1): 53–52. <https://doi.org/10.11606/issn.2316-9079.v14ip53-62>
- Ávila RW, Anjos LA, Gonçalves U, Freire EMX, Almeida WO, da Silva RJ (2010) Nematode infection in the lizard *Bogertia lutzae* (Loveridge, 1941) from the Atlantic Forest in north-eastern Brazil. *Journal of Helminthology* 84 (2):199–201. <https://doi.org/10.1017/S0022149X09990538>
- Cacciali P, Lotzkat S, Gamble T, Köhler (2018) Cryptic diversity in Neotropical gecko genus *Phyllopezus* Peters, 1878 (Reptilia: Squamata: Phyllodactylidae): a new species from Paraguay. *International Journal of Zoology* 2018: 3958327. <https://doi.org/10.1155/2018/3958327>
- Carvalho CM, Vilar JC, Oliveira FF (2005) Répteis e anfíbios. In: Carvalho CM, Vilar JC (Eds) Parque Nacional Serra de Itabaiana—Levantamento Biota. Biologia Geral e Experimental. IBAMA, Aracaju, Sergipe, 39–61.
- Couto-Ferreira D, Tinôco MS, Oliveira MLTD, Ribeiro HCB, Fazolato CP, Silva RMD, Barreto GS, Dias MA (2011) Restinga lizards (Reptilia: Squamata) at the Imbassai Preserve on the northern coast of Bahia, Brazil. *Journal of Threatened Taxa* 3 (8): 1990–2000. <https://doi.org/10.11609/JoTT.o2800.1990-2000>
- Costa HC, Bérnills RS (2018) Répteis do Brasil e suas Unidades Federativas: lista de espécies. *Herpetologia Brasileira* 7 (1): 11–57.

- Dias EJ, Rocha CF (2014) Habitat structural effect on Squamata fauna of the restinga ecosystem in northeastern Brazil. *Anais da Academia Brasileira de Ciências* 86 (1): 359–371. <https://doi.org/10.1590/0001-3765201420130006>
- Franco FL, Trevine VC, Montingelli GG, Zaher H (2017) A new species of *Thamnodynastes* from the open areas of central and northeastern Brazil (Serpentes: Dipsadidae: Tachymenini). *Salamandra* 53 (3): 339–350.
- Gamble T, Bauer AM, Greenbaum E, Jackman T (2008) Out of the blue: a novel, trans-Atlantic clade of geckos (Gekkota, Squamata). *Zoologica Scripta* 37 (4): 355–366. <https://doi.org/10.1111/j.1463-6409.2008.00330.x>
- Gamble T, Bauer AM, Colli GR, Greenbaum E, Jackman TR, Vitt LJ, Simons AM (2011) Coming to America: multiple origins of New World geckos. *Journal of Evolutionary Biology* 24 (2): 231–244. <https://doi.org/10.1111/j.1420-9101.2010.02184.x>
- Gamble T, Colli GR, Rodrigues MT, Werneck FP, Simons AM (2012) Phylogeny and cryptic diversity in geckos (*Phyllopezus*; Phyllodactylidae; Gekkota) from South America's open biomes. *Molecular Phylogenetics and Evolution* 62 (3): 943–953. <https://doi.org/10.1016/j.ympev.2011.11.033>
- Graboski R, Pereira-Filho GA, Silva AAA, Prudente ALC, Zaher H (2015) A new species of *Amerotyphlops* from northeastern Brazil, with comments on distribution of related species. *Zootaxa* 3920 (3): 443–452. <https://doi.org/10.11646/zootaxa.3920.3.3>
- Koch C, Venegas PJ, Böhme W (2006) A remarkable Discovery: description of a big-growing new gecko (Squamata: Gekkoniidae: *Phyllopezus*) from northeastern Peru. *Salamandra* 42 (2/3): 145–150.
- Loveridge A (1941) *Bogertia lutzae* a new genus and species of gecko from Bahia, Brazil. *Proceedings of the Biological Society of Washington* 54: 195–196.
- Oliveira CN, Muniz SLS, Moura GJB (2016) Reptiles of an urban Atlantic Rainforest fragment in the state of Pernambuco, northeastern Brazil. *Herpetology Notes* 9: 175–183.
- Passos DC, Zanchi D (2013) Basking in shadows and climbing in the darkness: microhabitat use, daily activity and thermal ecology of the gecko *Phyllopezus periosus* Rodrigues, 1986. *Herpetozoa* 25: 171–174.
- Pellegrino KCM, Kasahara S, Rodrigues MT, Yonenaga-Yassuda Y (1997) Pericentric inversion events in karyotypic distinction of Brazilian lizards of genus *Phyllopezus* (Squamata, Gekkoniidae) detected by chromosomal banding patterns. *Hereditas* 127: 255–262.
- Pires MG, da Silva Jr NJ, Feitosa DT, Prudente Filho AL (2014) A new species of triadal coral snake of the genus *Micrurus* Wagler, 1824 (Serpentes: Elapidae) from northeastern Brazil. *Zootaxa* 3811 (4): 569–584. <https://doi.org/10.11646/zootaxa.3811.4.8>
- Reis RR (2017) Fauna de Squamata da Reserva Particular do Patrimônio Natural Estação Veracel, Litoral Sul do Estado da Bahia, Brasil. Master's thesis, Universidade Federal do Espírito Santo, Espírito Santo, 100 pp.
- Rodrigues MT (1986) Uma nova espécie do gênero *Phyllopezus* de Cabaceiras: Paraíba: Brasil; com comentários sobre a fauna de lagartos da área (Sauria: Gekkonidae). *Papéis Avulsos de Zoologia* 36 (20): 237–250.
- Rodrigues KC, Delfim FR, Castro CSS, França FGR, Leite Filho E, Mesquita DO, Oliveira FA, Santos ACA, Ferrari SF, Valença-Montenegro MM (2013) *Strobilurus torquatus* Wiegmann, 1834 (Squamata: Tropiduridae): new record from the Brazilian state of Paraíba and a geographic distribution map. *Check List* 9 (3): 614–617. <https://doi.org/10.15560/9.3.614>
- Russell A, Bauer AM (1988) Paraphalangeal elements of gekkonid lizards: a comparative survey. *Journal of Morphology* 197 (2): 221–240. <https://doi.org/10.1002/jmor.1051970208>
- Silva UGD (2008) Diversidade de espécies e ecologia da comunidade de lagartos de um fragmento de Mata Atlântica no nordeste do Brasil. Master's thesis, Universidade Federal do Rio Grande do Norte, Natal 90 pp.
- Soeiro M (2013) Notas Sobre a Herpetofauna da Ilha do Monte Cristo, Saubara, Bahia. Undergraduate thesis, Universidade Federal da Bahia, Salvador, 34 pp.
- Thomas WW, Barbosa MRV (2008) Natural Vegetation Types in the Atlantic Coastal Forest of Northeastern Brazil. In Thomas WW (Ed.) *The Atlantic coastal forests of Northeastern Brazil*. *Memoirs of the New York Botanical Garden*. 100: 6–20.
- Uetz P, Freed P, Hošek J (Eds) *The Reptile Database*. <http://www.reptile-database.org/> Accessed on: 2018-08-28.
- Vanzolini PE (1968) Geography of the South American Gekkonidae (Sauria). *Arquivos de Zoologia, São Paulo* 17 (2): 85–112.
- Vanzolini PE (1972). Miscellaneous notes on the ecology of some Brazilian lizards (Sauria). *Papéis Avulsos de Zoologia* 26 (8): 83–115.
- Vanzolini PE, Ramos-Costa AMM, Vitt LJ (1980) Répteis das Caatingas. *Academia Brasileira de Ciências, Rio de Janeiro*, 161 pp.
- Vrcibradic D, Hatano FH, Rocha CFD, Van Sluys M (2000) Geographic distribution *Bogertia lutzae*. *Herpetological Review* 31: 112.
- Vitt LJ (1995) The ecology of tropical lizards in the Caatinga of northeastern Brazil. *Occasional Papers of the Oklahoma Museum of Natural History* 1: 1–29.